



# PUBLIC HEALTH PREPAREDNESS AND RESPONSE NATIONAL SNAPSHOT 2017



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

**This report was developed by the  
Office of Public Health Preparedness and Response,  
Centers for Disease Control and Prevention**

**Stephen C. Redd, MD**

RADM, USPHS, Director of OPHPR

**Dana L. Pitts, MPH**

Associate Director for Communication

**Kathy Gallagher**

Associate Director of Policy

**Jessica Alexander**

Senior Communication Specialist

**Steve Mann**

Graphic Designer

**Project Leads**

Suzanne Heitfeld, MPH

Sally Ezra

Nastassia L. Laster, MPH

**Project Team**

Sara D. Ramey, M.Ed.

Linda Tierney

Stephanie Bialek, MA

Jennifer Horvath

Darlene D. Rumph-Person, MPA

Arnetra Herbert, MS

Joanne Cox, MC

Stacey Hoffman, MPH

Michael Smith, MS

Taylor Kimbel, MPH

Amy Loy Mac Kenzie



*We cannot accept the status quo. We must put our investments into work that will make the world a safer place for us all. In doing this, we must first believe, as I do, that it is possible to create positive change and get results.*

*If you leave an opening – any opening – disease will find it. We can do more to recognize what causes outbreaks, respond to them faster, and bring them under control more effectively. In a time when what pops up in one corner of the world can find its way across the globe in a matter of hours, we have a responsibility to be prepared. We cannot take this responsibility seriously enough.*

— Stephen Redd, MD  
RADM, USPHS



# TABLE of CONTENTS

Welcome .....	7
Background.....	8

## PREPARE

Every Response is Local: Connecting with States .....	12
Health Security: How is the U.S. Doing? .....	15
Right Resources, Right Place, Right Time.....	16
Keeping Lifesaving Research Safe and Secure.....	20

## RESPOND

Four Responses at Once: An Unprecedented Challenge .....	24
Special Section: 2016 Zika Response .....	26
Laboratories: On the Front Lines of America's Health.....	34
Emergency Leaders: The Future of Incident Response.....	35

## CONNECT

Global Training to Protect Us All.....	38
Protecting Our Most Vulnerable .....	40
The Power of Preparedness: National Preparedness Month.....	42
Communicating in Emergencies .....	44

## LOOKING FORWARD

Readiness to Respond .....	49
Delivering Results through Partnership .....	50
A World of Protection.....	51







# PREPAREDNESS & RESPONSE: BY THE NUMBERS



**\$616**

million in annual Public Health Preparedness and Response funds awarded to 62 jurisdictions for 2016



**646**

CDC responders deployed internationally to fight Zika



**21,756**

incoming calls responded to from the public; state health departments; clinicians; and hospitals



**4**

CDC Emergency Operations Center responses at once: Polio, Ebola, Zika, and Flint, Michigan Water Contamination



**31,000**

Zika Prevention Kits distributed across the U.S. and its territories



**25**

countries sent public health leaders to CDC headquarters for emergency management training



**2,232**

federal, state, territorial, and local emergency responders trained on how to receive and distribute products from the Strategic National Stockpile



**216**

inspections of laboratories registered to handle select agents and toxins conducted by the Federal Select Agent Program in 2015



**64**

peer-reviewed publications and Morbidity and Mortality Weekly Reports published by Office of Public Health Preparedness and Response staff



**100**

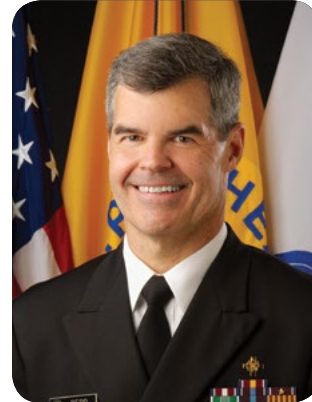
Public Health Emergency Preparedness-funded field staff assigned to 44 different awardee locations in 2016



# WELCOME

This year has shown us, once again, that we can't predict the next disaster. But it has also shown us clearly how being prepared protects health and saves lives.

Emergencies can devastate a single area, as we saw with Hurricane Matthew, or span the globe, like Zika virus. Disasters from 9/11 to Ebola have demonstrated that we absolutely must have people, strategies, and resources in place before an emergency happens.



CDC is committed to strengthening the nation's health security by protecting against public health threats, whether they begin at home or abroad, or if they are natural or man-made. We know that when we don't respond quickly and to scale, outbreaks become epidemics, natural disasters become crucibles for illness, and the human toll of terrorist attacks can mount.

This is why we **prepare** by making sure workers are trained, systems are functioning, and critical medicines and supplies are available before an emergency happens. It is why we **respond** with experts who stand up quickly when disaster strikes. It is why we **connect**, bringing people together with the resources they need, sharing our best knowledge, and supporting our partners at every level and in every sector.

CDC has decades of experience in bringing top scientific expertise to health emergencies and remains a trusted partner in the United States and around the world. The Office of Public Health Preparedness and Response remains focused on making sure we're ready to respond to any crisis – both those we can anticipate and those we don't see coming. We must be ready to act to save lives.

Every response holds lessons on how to prepare for the next one. Today's interconnected landscape calls on us to invest, to innovate, and to remain flexible in our effort to safeguard the health and security of all Americans.

A handwritten signature in black ink, reading "Stephen Redd".

Stephen Redd, MD  
RADM, USPHS,  
Director, Office of Public Health Preparedness and Response

## What are public health threats?



### Biological threats

can spread rapidly. They can be natural, accidental, or deliberate. They include viruses, bacteria, parasites, fungi, or their toxins that can cause illness or death in people, animals, or plants. Examples of biological threats include flu viruses or bacteria that contaminate foods.



### Natural disasters

include heat waves, snow or ice storms, earthquakes, hurricanes, and floods.



### Chemical and radiological materials

released accidentally or intentionally could create large-scale public health emergencies, especially in densely populated areas.

## BACKGROUND

An emergency can happen at any moment, and the U.S. must be ready to respond to pandemics, natural disasters, and other public health threats. Our action – or inaction – in this area directly affects the health of the American people and is a matter of national security.

The terrorist and anthrax attacks of 2001 revealed critical gaps in our nation's preparedness and our ability to connect around response efforts. Emerging diseases like H7N9, MERS, Ebola, and Zika continue to show us that we cannot let our guard down. Preparedness demands constant vigilance and investment to keep up with public health threats as they evolve.

CDC's Office of Public Health Preparedness and Response is uniquely positioned to:

### PREPARE

We make sure people are trained, systems are functioning, and critical medicines and supplies are available before an emergency strikes.

### RESPOND

We combine emergency management expertise and the world's best scientists to monitor and respond to emergencies 24/7.

### CONNECT

We have a track record of working effectively with state and local health departments, federal partners, and across CDC to get fast results and communicate accurate and timely information when lives are at stake.

No matter what the cause, the Office of Public Health Preparedness and Response and its partners across CDC and the world are working to protect health and save lives.










# PREPARE





A group of emergency responders, including police and EMTs, are gathered outdoors for a statewide exercise. They are wearing high-visibility vests in orange and yellow. In the foreground, two individuals are seen from behind, wearing maroon vests with "PUBLIC HEALTH" printed on them. The background features a blue utility vehicle with its rear door open and a dense line of trees under a clear sky.

*Georgia responders gather for a statewide exercise to test plans for distributing critical medicines and supplies during a large-scale public health emergency.*



# EVERY RESPONSE IS LOCAL

## THE CHALLENGE:

Communities continually face unexpected emergencies. State and local health departments across our country fought to protect communities from Zika virus outbreaks, while other areas were devastated by floods, hurricanes, or wildfires. State and local health departments must be prepared to handle large-scale emergencies, as well as identify and respond to the many smaller emergencies and potential outbreaks that threaten our nation each year.

## OUR STRATEGY:

CDC works with state and local partners to provide assistance, guidance and funding, helping communities get ready to handle any public health crisis. Since 9/11, the Public Health Emergency Preparedness (PHEP) cooperative agreement has provided more than \$11 billion to public health departments to prepare and respond to threats across the nation. PHEP funds support preparedness activities in 50 states, 4 localities, and 8 territories and freely associated states.

## MOVING THE DIAL:

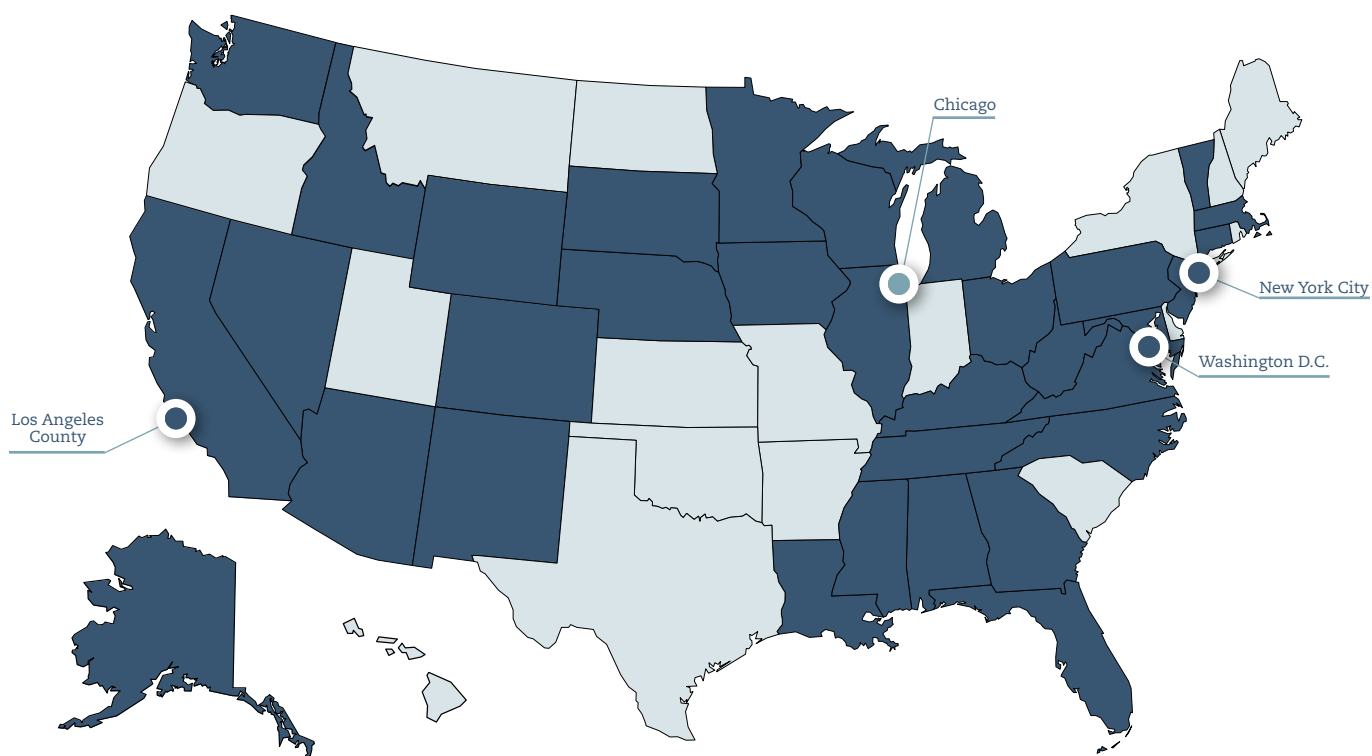
CDC created a new process to evaluate state and local readiness to plan and execute a large-scale response that requires the rapid distribution and dispensing of lifesaving medicines and medical supplies. Through the Medical Countermeasure (MCM) Operational Readiness Review, CDC and the states conducted 487 evaluations in 72 of the nation's largest population centers, where nearly 60% of the U.S. population reside. The process illuminated strengths and gaps in our current systems. The review identified barriers to achieving response readiness, including insufficient staffing for points of dispensing operations and security. To increase state and local expertise in MCM planning, CDC offers ongoing virtual and in-person training, guidance documents, technical assistance, and other resources for MCM distribution and dispensing.

## Helping State and Local Health Departments

CDC has highly trained disease detectives placed across the nation to support state and local health departments. In 2016, 100 PHEP-funded field staff were assigned to 44 different awardee locations, including 33 states, 3 localities, and 8 U.S. territories. PHEP-funded field staff include Public Health Associate program associates and preparedness field assignees, public health advisors (PHAs), temporary epidemiology field assignees (TEFAs), and career epidemiology field officers (CEFOs).

CDC's Office of Public Health Preparedness and Response developed the *Career Epidemiology Field Officer* program in 2002 to help health departments strengthen their epidemiological capacity. In response to the Ebola outbreak, CDC created the *Temporary Epidemiology Field Assignee* program in 2015 to strengthen epidemiologic capability to respond to Ebola or similar disease introductions.

CEFOs and TEFAs help states prepare for and respond to both small and large-scale emergencies, from Ebola to Zika to foodborne outbreaks and meningitis.



■ Map: Locations with assigned PHEP-funded field staff in 2016



## States Race Against Deadly Opioid Epidemic

More than 52,000 people died from drug overdoses in 2015; among those, more than 33,000 involved a prescription or illicit opioid. Standing on the front lines of the U.S. opioid epidemic are state and local emergency response systems. As states like Virginia and Massachusetts declare public health emergencies, they draw on the infrastructure that CDC has helped build nationwide since 9/11 to empower first responders, improve surveillance, and develop critical laboratory tests.

CDC's PHEP funding has been instrumental in sustaining and expanding the Laboratory Response Network-Chemical (LRN-C), which provides critical infrastructure that states

can use to address local emergencies and emerging epidemics. The Department of Forensic Sciences, Public Health Laboratory Division, Washington, D.C., has used LRN-C equipment and technical skills to develop tests for new synthetic opioids and assist law enforcement efforts to broaden the classification of illegal chemical substances. CDC's PHEP funding and expertise complements other CDC activities focused on improving surveillance, scaling up effective public health interventions, and supplying health-care providers and systems with prescribing guidance. CDC's comprehensive efforts continue to help states counter rising rates of addiction and overdoses as they face this crippling epidemic head-on.



# HEALTH SECURITY: HOW IS THE U.S. DOING?

## THE CHALLENGE:

The most effective and least expensive way to protect Americans from health threats is to stop them before they spread. The emergence of diseases like SARS and Ebola – and now Zika – continues to prove that we cannot let our guard down.

## OUR STRATEGY:

As part of the Global Health Security Agenda, teams of international experts travel to countries to report on how well public health systems are working to prevent, detect, and respond to outbreaks. This process is known as the Joint External Evaluation.

## MOVING THE DIAL:

In October 2015, CDC and the Office of the Assistant Secretary for Preparedness and Response (ASPR) began working together to arrange for a team of evaluators to visit the U.S. In May 2016, a Joint External Evaluation team made a five-day visit to the U.S. to look at our public health systems. Two days were spent in Washington, D.C., assessing federal response capabilities. The remaining three days were spent at CDC, as the agency contributes to nearly all of the 19 technical areas included in the evaluation.

In the final report, the team concluded that “the U.S. has extensive and effective systems to reduce the risks and impacts of major public health emergencies, and actively participates in the global health security system.” They recognized the high level of scientific expertise within CDC and other federal agencies, and the excellent reporting mechanisms managed by the federal government.

### Did you know?

#### Scientific research in laboratories

is a critical part of our nation’s defense against both naturally occurring diseases and bioterrorism. Research leads to discoveries that save lives, like when we create a vaccine to protect from smallpox or when we’re able to track mutations of killer diseases like Ebola.

# RIGHT RESOURCES, RIGHT PLACE, RIGHT TIME

## THE CHALLENGE:

A large-scale emergency or a rare or unexpected health threat can quickly deplete medicines and supplies, leaving state, territorial and local agencies unable to protect the public from some of the most devastating illnesses.

## OUR STRATEGY:

CDC's Strategic National Stockpile is ready to send critical medical supplies quickly to where they are needed most to save lives. With more than \$7 billion of products in its inventory, the stockpile is the nation's largest supply of life-saving pharmaceuticals and medical supplies that can be used in a public health emergency if local supplies run out. Organized for scalable response to a variety of public health threats, the repository contains enough supplies to respond to multiple large-scale emergencies simultaneously.

## MOVING THE DIAL:

The stockpile partners with private industry and other federal agencies to make sure every step of the medical supply chain – from manufacture to delivery – is coordinated. One example of this type of partnership is the ongoing collaboration between the stockpile and industry trade organizations to develop solutions and strategies for issues like product shortages and substitutions. The stockpile uses its relationships in time of crisis and shortage to informally advise industry on the best way to distribute material that will help the overall response.

The stockpile also assists states and local jurisdictions with full-scale exercises – a total of 18 in 2016 – to ensure that systems for delivering medicines are functioning well before they are needed in an actual emergency. In addition to exercise support, in the past year stockpile experts conducted training for 2,232 federal and state, local, tribal, and territorial emergency responders representing 43 different jurisdictions. These trainings focus on how to receive and distribute products provided by the stockpile in a public health emergency.







## Did you know?

When a state or territory requests assistance to support their medical countermeasure response efforts, the stockpile stands ready to deliver:

### Inventory

Medicines, vaccines, and supplies that are rapidly deployable to respond to a health emergency, regardless of whether the threat is known or unknown. These products are strategically positioned in warehouses across the country and carefully configured so that they can arrive in any affected area in the United States in 12 hours or less.

### CHEMPACK

Containers are pre-positioned at ~ 1,300 sites nationwide to provide chemical antidotes to >90% of the U.S. population within 1 hour of exposure.

### Federal Medical Stations

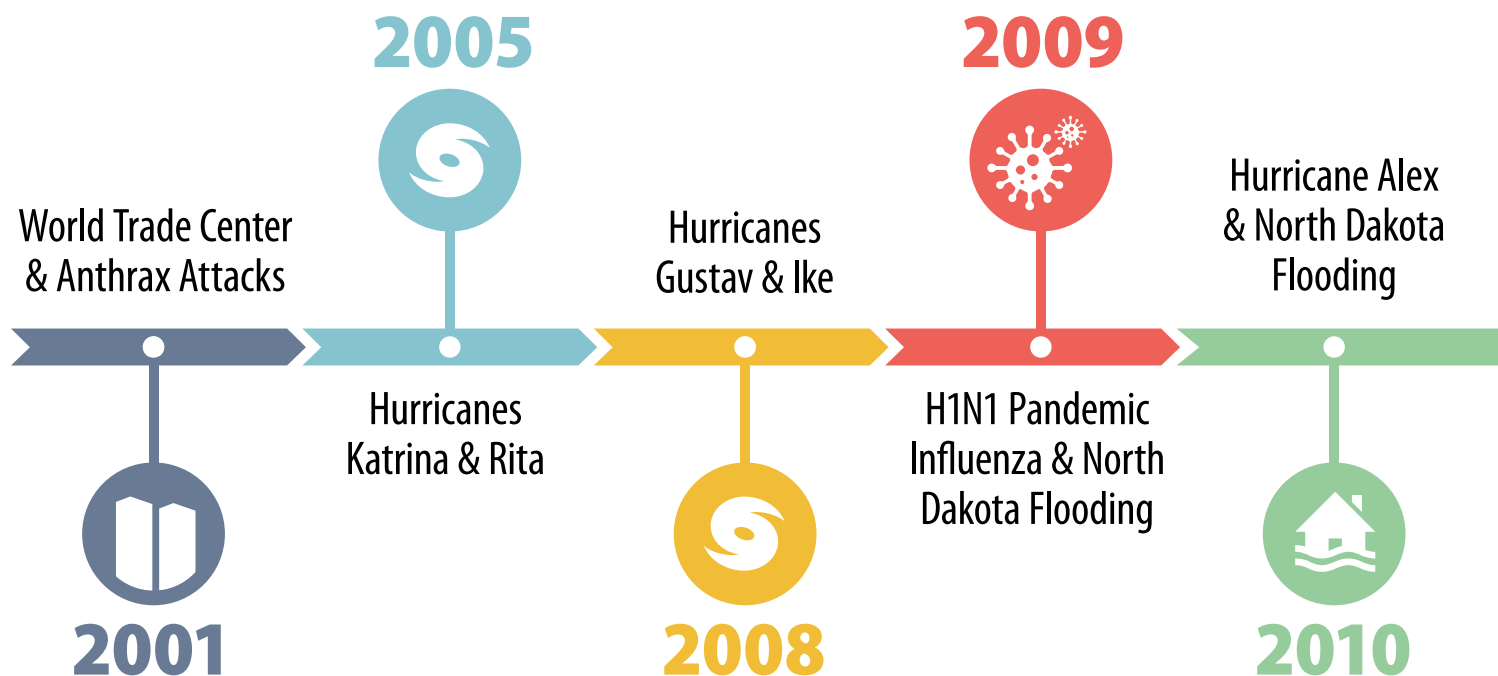
Caches of beds, supplies, and medicines are available to establish temporary medical shelters to provide care for 50–250 displaced people with health-related needs.

### Personnel

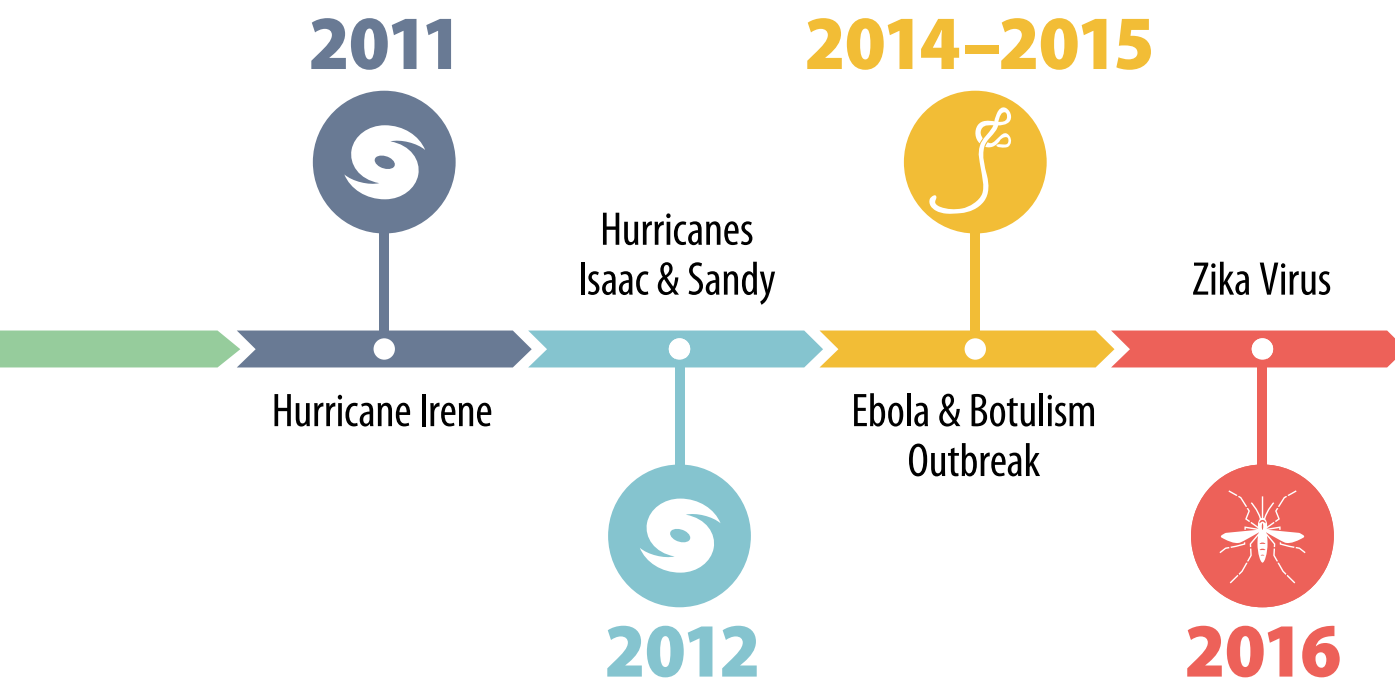
Multiple teams of stockpile experts can quickly travel to state and local jurisdictions to provide onsite logistics and operations support in an emergency.



## STOCKPILE RESPONSES



Originally called the National Pharmaceutical Stockpile, the Strategic National Stockpile was created in 1999 to ensure the nation's readiness against potential agents of bioterrorism. The mission was to assemble large quantities of essential medical supplies that could be delivered to states and communities during an emergency within 12 hours of the federal decision to use the stockpile.



Since its beginning, the stockpile has responded to multiple large-scale emergencies including floods, hurricanes, and influenza pandemics. It has also supported various small-scale deployments for the treatment of individuals with life-threatening infectious diseases like anthrax, smallpox, and botulism.

# KEEPING LIFESAVING RESEARCH SAFE AND SECURE

## Did you know?

Another regulatory program, CDC's *Import Permit Program*, ensures that importation of infectious biological materials that could cause disease in people is monitored and that the facilities receiving these permits have appropriate biosafety measures in place to work with the materials. About 2,000 import permits are issued annually by CDC.

## THE CHALLENGE:

We have a responsibility to keep potentially dangerous pathogens and poisons (which we call *select agents and toxins*) safe during research and to prevent them from being stolen, lost, or accidentally or intentionally released. The anthrax attacks of 2001 focused our nation on making sure select agents and toxins are handled safely and protected at all times.

## OUR STRATEGY:

We ensure that research with pathogens that have the potential to pose a severe threat to public health and safety is conducted as safely and securely as possible. The *Federal Select Agent Program* regulates labs registered to handle select agents and toxins. The program is managed jointly through CDC and USDA's Animal and Plant Health Inspection Service. CDC experts in microbiology, biosafety and biosecurity, and science know what to look for and how to apply the regulations to a variety of laboratory settings.

## MOVING THE DIAL:

To keep select agents and toxins safe, secure, and out of the hands of those who might misuse them, we conducted about 200 laboratory inspections and approved individual access for those who handle these potentially deadly pathogens and toxins. In September 2016, CDC published the Interim Final Rule for *Bacillus cereus biovar anthracis*, adding this emerging pathogen to the list of Health and Human Services select agents and toxins that are Tier 1 agents. Tier 1 agents pose the greatest risk of deliberate misuse.

The *Federal Select Agent Program* continues to address and respond to recommendations from multiple external reviews of the program, and in June released a public report of program data to increase understanding of the program.





## Behind the Clipboard: Laboratory Inspectors

CDC's laboratory inspectors keep tabs on the nation's critical select agent and toxin laboratories. Laboratory inspections generally last about 3 days and require that inspectors travel to sites all over the country, usually going out about once a month. And the job is never dull.

Every lab is different. Some labs keep animals on the premises, while others have huge set-ups that mimic the factories that process our food supply. It's the inspectors' job to make sure that, no matter what's happening in a

given lab, everything is safe and secure. "You have to figure out how the regulations apply to every situation no matter how unique it is," said one inspector.

"I think the impact of our work is important to talk about," says another inspector. "The impact of this work is to allow important research to be done. Research that involves risk. And our job is to allow this work to continue with as little risk as possible."



# RESPOND





*A water rescue team searches for flood victims in Oklahoma.*



Photo Credit: Federal Emergency Management Agency



# FOUR RESPONSES AT ONCE: AN UNPRECEDENTED CHALLENGE

## Did you know?

Polio, Ebola, and Zika have been declared **Public Health Emergencies of International Concern (PHEICs)** by the World Health Organization. Only four PHEICs have ever been declared. A PHEIC is defined as “an extraordinary event which is determined to constitute a public health risk to other states through the international spread of disease, and to potentially require a coordinated international response.” To date, the World Health Organization has declared four PHEICs: H1N1 flu, Ebola, Zika, and polio.

## THE CHALLENGE:

When an emergency happens, we must respond quickly and to scale. Every year for the past 30 years, a new contagious disease has emerged — any one of which might threaten the health and economy of our nation.

## OUR STRATEGY:

The CDC Emergency Operations Center was in full swing as our experts rose to new challenges, facing multiple global and national crises at the same time.

## MOVING THE DIAL:

In early 2016, CDC, for the first time ever, managed four public health emergencies simultaneously:

- Ebola
- Flint, Michigan Water Contamination
- Zika Virus
- Polio Eradication

Two of these responses — Zika Virus and Polio Eradication — remain ongoing. We continue to provide 24/7 expertise, staffing, resources, and coordination in response to natural disasters, terrorist attacks, and infectious disease threats.

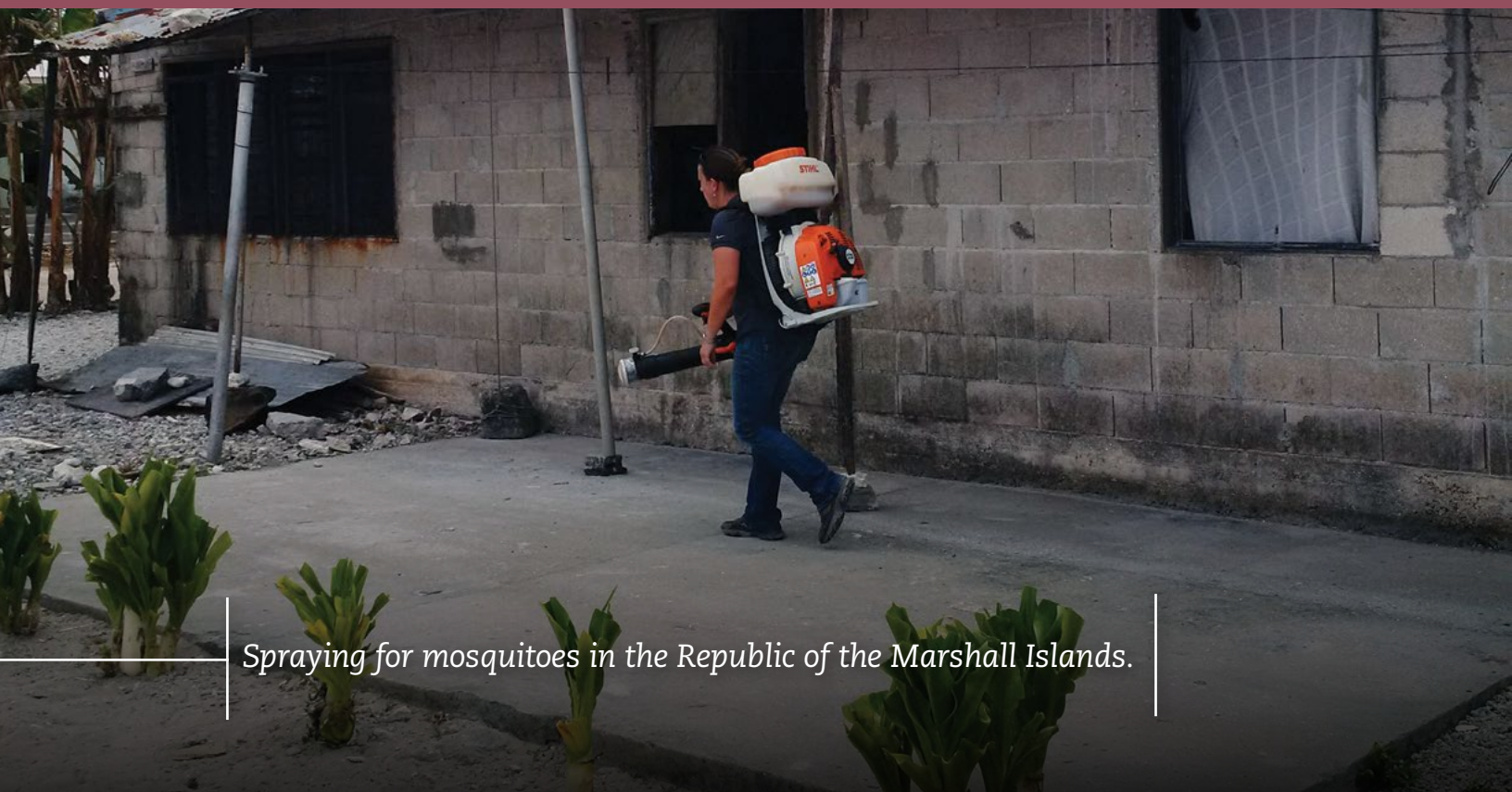
*\$8 million has been awarded to fund public health preparedness research to improve the ability of CDC and its partners to effectively respond to public health emergencies and disasters.*





**Duty Officer**

# 2016 ZIKA RESPONSE



*Spraying for mosquitoes in the Republic of the Marshall Islands.*

## A COMPLEX THREAT: THE RISE OF ZIKA VIRUS

### THE CHALLENGE:

The spread of Zika virus has presented a complex challenge for the nation and the world.

### OUR STRATEGY:

As public health responders and organizations raced to mount a response to Zika virus, many questions needed answers. CDC scientists and responders were activated in CDC's Emergency Operations Center (EOC), where they combed through research findings, developed and distributed diagnostic tests, and provided on-the-ground support for mosquito control and education to protect people from Zika infection, especially pregnant women for whom Zika can cause birth defects in fetuses and infants.

The EOC is the command center for monitoring and coordinating emergency responses to public health threats (or concerns), such as Zika. In this response, it brought together CDC scientists with expertise in viruses, reproductive health, birth defects, developmental disabilities, and travelers' health.



## MOVING THE DIAL:

On January 22, 2016, CDC activated the EOC to respond to outbreaks of Zika occurring in the Americas and increased reports of birth defects and Guillain-Barré syndrome (GBS) in areas affected by Zika. On February 8, 2016, CDC elevated its EOC activation to a Level 1—the highest level. The pace of the response increased dramatically in April after CDC scientists concluded that Zika virus is a cause of microcephaly and other birth defects. The EOC's work includes:

- Supporting on-the-ground response efforts in areas with Zika
- Developing laboratory tests to diagnose Zika
- Conducting studies to learn more about the link between Zika and microcephaly and other birth defects, and Zika and GBS
- Monitoring and reporting cases of Zika to improve understanding of how and where Zika is spreading
- Educating the public about Zika, including teaching healthcare providers how to identify the virus
- Providing guidance to travelers and Americans living in areas with current outbreaks
- Surveillance for the virus in the U.S., including US territories

As of December 2016, CDC employees completed over 1,000 deployments in response to Zika. In addition, through the support of the CDC Foundation, CDC assembled more than 31,000 Zika Prevention Kits (ZPKs) for US territories that include insect repellent, larvicides, mosquito netting, condoms to prevent sexual transmission of Zika, and educational materials. Through the management of mosquito control contracts, CDC oversaw the spraying of more than 9,000 residential homes, hospitals, schools, and churches in areas affected by Zika.

In 2016, CDC's Import Permit Program issued 185 permits to help ensure samples of the virus were brought safely into the United States, so that experts are able to learn more about the disease, develop tests, and find treatments.

*Zika is the first virus in more than 50 years linked to serious birth defects.*

With local mosquito-borne Zika virus infection still being reported in the Americas and other parts of the world, CDC's work is far from complete. CDC will continue to work with state, tribal, local, and territorial partners to protect the health of communities.



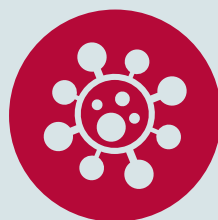
# ZIKA RESPONSE

Today's Zika outbreak is unprecedented. Although it was first identified almost 70 years ago, Zika virus has only recently been identified as a cause of microcephaly and other severe birth defects. It has spread to more than 60 countries and territories throughout the world, including the United States.



## TAKING ACTION

- 1,000+ total CDC deployments for Zika
- 2,000+ CDC staff have been involved in the response
- 31,000+ Zika Prevention Kits distributed across the United States and its territories
- 252 guidance documents, publications, and abstracts sent through clearance



## TRACKING THE VIRUS

- 120,000+ specimens processed by CDC labs and the Laboratory Response Network
- 48 states, Washington, D.C., and Puerto Rico have capacity to test for Zika virus
- Zika pregnancy registries set up in all 50 states, Washington, D.C., and U.S. territories
- 21 ongoing epidemiologic studies



## SPREADING THE WORD

- 60 travel health notices posted
- 4 CDC Emergency Response Teams deployed to Alabama, Florida, Texas, and Utah
- Published 47 MMWR early releases
- Answered 26,000+ CDC Info inquiries
- Distributed 9 Health Alert Network (HAN) messages and hosted 9 Clinician Outreach Communication Activity Calls



## SUPPORTING RESPONSE

- \$50 million awarded to 41 states, 4 localities, and 8 territories





**Before 2015**

Zika virus outbreaks occur in areas of Africa, Southeast Asia, and the Pacific Islands

**May 2015**

Pan American Health Organization issued an alert for the first confirmed cases of Zika virus in Brazil

**January 22, 2016**

CDC activated its Emergency Operations Center to respond to outbreaks of Zika in the Americas

**February 1, 2016**

The World Health Organization (WHO) declared Zika a Public Health Emergency of International Concern (PHEIC)

**February 8, 2016**

CDC elevated its Emergency Operations Center activation to Level 1, the highest level

**April 13, 2016**

CDC scientists announced that Zika virus is a cause of microcephaly and other severe birth defects

**November 18, 2016**

WHO declared the end of the PHEIC, after deciding that Zika virus and its associated consequences remain a significant enduring public health challenge requiring intense action, but no longer represent a PHEIC

# ZIKA: Stories From the Field

In the United States and around the world, CDC experts are finding ways to reduce the spread of Zika virus. CDC has a 70-year history of combatting the pathogens mosquitoes carry, with its origins closely tied to the fight against malaria in the United States. The work not only involves understanding mosquitoes and the pathogens they spread, but also how to use that knowledge to mount an effective response.

.....

## **RAPID RESPONSE TEAMS HELP STATES COMBAT ZIKA**

When states reach out for help, a CDC Emergency Response Team (CERT) stands ready to answer the call. A CERT is a highly trained group of public health experts who can travel anywhere in the country to meet the unique needs of requesting states. It is a flexible team that can give as much – or as little – support as requested, whether it’s sending epidemiologists, laboratorians, and vector control experts into the field or providing answers from headquarters.

Janet McAllister, an entomologist with CDC’s Arboviral Diseases Branch in Ft. Collins, Colorado, traveled to Florida as part of a CERT. As a vector control specialist, McAllister’s work in Florida involved monitoring daily surveillance from mosquito traps. McAllister offered scientific expertise, working closely with state and local experts to make decisions about the best ways to reduce mosquito populations.

Whenever she saw unusually high numbers of mosquitoes in a trap, McAllister went to the field to find out why. “In investigating one particular trap,” she says, “we traced the source to a neighbor’s bromeliad garden behind the fence.”

“Everyone is watching what’s happening in other locations regarding Zika,” says Maleeka Glover, who serves as CDC’s CERT lead and liaison to the states. “And we’ve made an extra effort to make sure the United States is prepared to address local transmission and the effect of Zika on pregnant women and infants.”



## LOST AND FOUND IN THE MARSHALL ISLANDS

In the Republic of the Marshall Islands, homes do not have street names or numbers. Instead, they're identified by color or by another identifying symbol. Without addresses, how would Zika responders and contractors find the places where help was needed?

The Strategic National Stockpile worked with a team of "zone nurses," who were assigned to one of six different geographic areas on the island, armed with a list of names provided by the island's hospital. On an island where phone networks and hotspot services are unreliable, stockpile personnel had to strategize with the zone nurses and officials from the island's public works department to locate homes using GPS latitude and longitude to plot directions on a map.

Zone nurses then knocked on doors to locate pregnant women in need of Zika prevention resources and services. Through collaboration, technology, and creative problem solving, teams were able to deliver Zika Prevention Kits and educational materials and spray for mosquitoes both inside and outside homes.





---

## ENSURING STATES, LOCALITIES, AND TERRITORIES ARE READY TO FIGHT ZIKA

To make sure the latest science is available for state, local, and territorial health departments during a public health emergency, CDC activates the State Coordination Task Force (SCTF) within the Emergency Operations Center. The task force has been instrumental during the Zika response in helping communities prepare for and respond to the outbreak. They have facilitated the development of key guidance documents and provided recommendations that jurisdictions can adapt as they develop state-specific Zika action plans. In areas affected by Zika, the task force worked with national partners to coordinate staffing support with expertise in health education, laboratory, and epidemiology; conduct needs assessments; provide training; and develop resource guides.

The task force established three regional country desks to triage requests for information or assistance from deployed staff and external partners: the Continental United States Desk, the Pacific Islands Desk, and the Caribbean Islands Desk. They have conducted numerous national calls and more than 115 recurring regional desk calls with select jurisdictions identified as high risk for Zika transmission or experiencing a high volume of travelers from affected areas. During the calls, the task force provides situational awareness, updates on Zika response activities, and CDC guidance and recommendations.







## .....

### **TRIPLE-THREAT LAB TEST SIMPLIFIES DISEASE DETECTION**

Before the current Zika outbreak – in 2015 – CDC had already begun developing the Trioplex Real-time RT-PCR (rRT-PCR) Assay. The Trioplex allows labs to detect three viruses at once: chikungunya, dengue, and Zika. These viruses often occur in the same areas, are carried by the same mosquito, and cause similar symptoms in patients.

Scientists working on the test anticipated a multi-year process of development, testing, and approval. But when Zika emerged as a public health emergency, they needed to accelerate the timeline.

The scientific team responding to Zika in Puerto Rico worked overtime to speed up the development and approval process to meet the needs of the outbreak. Combining three tests into one was challenging. They had to make sure that the tests for Zika, dengue, and chikungunya had the same success rate for correctly identifying each infection when combined into a single test.

Once the test was developed, scientists needed to fast-track the process of getting the Trioplex into labs. CDC's Laboratory Response Network (LRN) worked closely with the U.S. Food and Drug Administration (FDA) to obtain an Emergency Use Authorization (EUA) to allow the test to be used immediately. The EUA was received in March 2016. The test was distributed across the United States through the LRN. The LRN also provided test panels to verify that labs could accurately use the test. No FDA-cleared diagnostic tests for Zika existed before the outbreak. The Trioplex assay is a critical tool in the fight against Zika.

# LABORATORIES: ON THE FRONT LINES OF AMERICA'S HEALTH

## Did you know?

A strong network of laboratories can:

- Identify threats early and close to the source
- Provide trusted results
- Share information rapidly and securely
- Deploy new technologies quickly across the country

## THE CHALLENGE:

In the event of an infectious disease outbreak, chemical release, or bioterrorist attack, we need laboratory capacity to quickly detect, diagnose, and treat those who are impacted.

## OUR STRATEGY:

To grow laboratory capacity nationwide, CDC and its partners have established the Laboratory Response Network (LRN), which brings together a select group of state and local public health, federal, military, and international laboratories. The LRN is a unique asset in the nation's preparedness for biological and chemical terrorism.

The network connects more than 150 biological laboratories in all 50 states, Australia, Canada, the United Kingdom, Mexico, and South Korea to respond quickly to high priority public health emergencies. Forty-six state and local public health laboratories test clinical specimens to measure human exposure to toxic chemicals.

## MOVING THE DIAL:

CDC and its laboratory partners are developing and deploying tests to combat our country's most pressing infectious and non-infectious health issues, from Zika virus to opioid overdose. We have an unmatched ability to handle challenges that are complex, occur rarely but may have severe consequences, or threaten to overwhelm local resources. Our laboratory experts continue to think ahead to future risks and stay on the cutting edge of science to address an ever-evolving set of dangers.

Our network of laboratories helps figure out what tests are needed, develop them when necessary, and get them to those who need to use them. They can discover and explain everyday threats like foodborne illnesses or flu, and extraordinary incidents like anthrax or contaminated public drinking water.

As of this year, 87% of the U.S. population is located within a 100-mile radius of an LRN laboratory. Moving forward, we will continue to build the capacity of state and local public health labs for better detection and surveillance of infectious pathogens in the United States.

# EMERGENCY LEADERS: THE FUTURE OF INCIDENT RESPONSE

## THE CHALLENGE:

When every minute counts, we need people who are prepared to step in and take immediate action. In any crisis, having people who know what to do — and having the resources in place to allow them to do their jobs — saves lives.

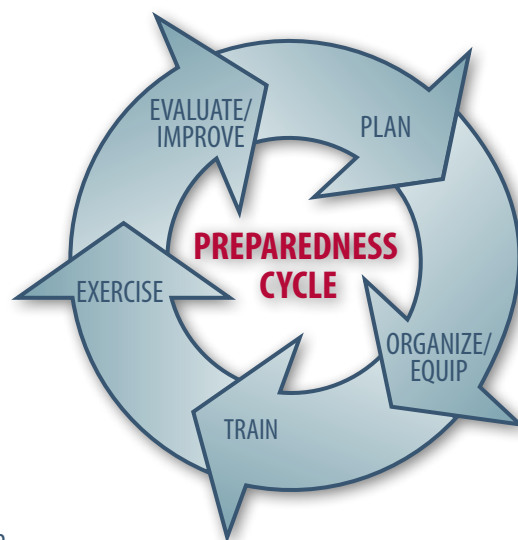
## OUR STRATEGY:

Trained emergency leaders bring the best science together with the most efficient systems for managing people and resources. Learning and using a common framework like the CDC Incident Management System helps responders “speak the same language” during an event and work more seamlessly together.

## MOVING THE DIAL:

CDC reached across the agency through its *Incident Management Training and Development Program* to train its subject matter experts in the principles of incident management, bringing scientific knowledge and emergency expertise together. In this way, those CDC scientists who are most likely to be called upon to lead an emergency response can better understand how to best use their available resources.

We also continued to train leaders from around the world—25 countries in 2016—through our *Public Health Emergency Management Fellowship*, an innovative, 4-month course based at our Atlanta headquarters. Knowledge gained in this course was immediately used to head off an outbreak of H5N1 influenza in Cameroon and a cluster of Ebola cases in Sierra Leone. Throughout the training, international leaders connected with CDC and with each other to improve the way their countries respond to emergencies by developing and streamlining their own Public Health Emergency Operations Centers.





# CONNECT



*A young girl waits at a Red Cross Shelter in North Dakota.*



*Photo Credit: Federal Emergency Management Agency*



# GLOBAL TRAINING TO PROTECT US ALL

## THE CHALLENGE:

When a disease can spread from an isolated village to any major city in as little as 36 hours, investing in public health in other countries is necessary to protect U.S. health security.

## OUR STRATEGY:

As part of our national commitment to global health security, the United States supports 17 countries to develop their capacity to prevent, detect, and effectively respond to infectious disease threats. We have seen fast and quantifiable results of our work in flagship countries like Cameroon, Senegal, and Vietnam. With intensive CDC technical guidance, Cameroon reduced the time their Public Health Emergency Operations Center takes to respond to an emergency from 8 weeks (cholera, 2014) to just one day (avian influenza, 2016), demonstrating that focused investment pays off.

## MOVING THE DIAL:

CDC conducted on-site planning workshops in Ethiopia, Uganda and Cameroon and initial assessment visits in 16 of the 17 participating countries we support and helped to identify Emergency Operations Center (EOC) facilities or space in 14 of the 17 countries. As a result of CDC efforts, ministries in Cameroon, Cote d'Ivoire, Sierra Leone, Tanzania, and Uganda have activated their EOCs to respond to public health emergencies such as Ebola, H5N1 influenza, meningitis, cholera, aflatoxicosis, yellow fever, and a train derailment. In 2016, CDC provided technical assistance and training to 44 countries (both in country and in Atlanta) and 2 global organizations: the African Union and the World Health Organization.





### Investing in People Stops Outbreaks Faster

When Dr. Aristide Abah stepped off the plane that brought him from Atlanta back to his home in Cameroon, there was no time to waste. An outbreak of H5N1 flu threatened the country, and it was up to Dr. Abah to lead the response. Fortunately, he was prepared. Dr. Abah had just spent 4 months at CDC headquarters as part of a fellowship that invites public health experts from all over the world to learn how to organize an emergency response in their country. These investments in preparedness are paying off. Just over a year before, it took Cameroon 8 weeks to activate its public health emergency operations center in response to a cholera outbreak; during the H5N1 outbreak, it took less than 24 hours to activate the response, resulting in zero transmissions to humans.



# PROTECTING OUR MOST VULNERABLE

## THE CHALLENGE:

Some populations, like children, individuals with disabilities, and others with functional and access needs, may need extra help during and after an emergency.

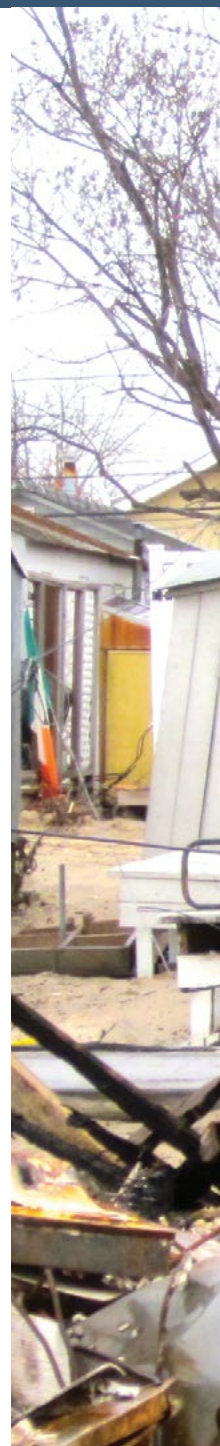
## OUR STRATEGY:

We support efforts all across the country to help those who may be at greater risk from an emergency. From planning for the 69 million children who may be in school when disaster happens to the millions of Americans who need to make sure prescriptions are filled, medical equipment is working, and help arrives even if power is out and roads are blocked, it's up to us to protect our most vulnerable in emergencies.

## MOVING THE DIAL:

Schools have direct contact with approximately 95% of America's children between 5 and 17 years of age for about 6 hours a day and are active partners in the unfolding of emergency events such as hurricanes or floods. A recent CDC publication indicated that 79.9% of school districts required schools to have a comprehensive plan that includes provisions for students and staff members with special needs. More than 90% of schools collaborated on plans with staff members from individual schools within the district, local fire departments, and local law enforcement agencies.

*More than 5,000 cases of missing children were reported separated from their families after Hurricane Katrina, many for weeks, and some for months.*





## Connecting Research to Improve Response

After Superstorm Sandy, the U.S. Department of Health and Human Services, including CDC, funded 31 projects to evaluate resiliency and recovery in areas related to healthcare delivery, the public health system response, risk communication, worker safety, environmental and occupational hazards, and the physical and mental health impacts on the general population. Research results enhanced the recovery process and contributed to the resiliency of this region and its communities to withstand future public health threats. Information from these studies provided insight on how to adapt and sustain our public health and healthcare systems during adverse weather events. In addition, the results can immediately be applied to communities recovering from similar disasters.



# THE POWER OF PREPAREDNESS: NATIONAL PREPAREDNESS MONTH

## THE CHALLENGE:

We must prepare for emergencies at every level, from the global to the individual.

## OUR STRATEGY:

National Preparedness Month supports awareness and education on what everyone can do ahead of time to stay safe when crisis strikes.

## MOVING THE DIAL:

Throughout September, CDC and more than 3000 organizations — national, regional, and local governments, as well as private and public organizations — supported emergency preparedness efforts and encouraged Americans to take action through the National Preparedness Month campaign. CDC's theme for 2016 was "The Power of Preparedness." Our communications experts worked with external and internal partners to help raise awareness about the importance of preparing and responding to public health emergencies at all levels.

*From 1980–2016, the United States has been affected by 203 weather and climate disasters that exceeded \$1 billion each, including 23 drought events, 26 floods, 7 freeze events, 83 severe storms, 34 tropical cyclones, 13 wildfires, and 14 winter storms.*

# THE POWER OF PREPAREDNESS

## National Preparedness Month 2016

### GLOBAL



#### PREPARE GLOBALLY

The world has come together to better prevent, detect, and respond to health threats

ABOUT 2/3 OF THE **WORLD** REMAINS UNPREPARED TO HANDLE A PUBLIC HEALTH EMERGENCY

### COUNTRY



#### PREPARE TO RESPOND

Emergency Operations Centers (EOCs) bring experts together to make decisions quickly in emergencies

THE CDC EOC HAS BEEN **ACTIVATED** MORE THAN **90%** OF THE TIME IN THE LAST 7 YEARS

### STATE



#### PREPARE LOCALLY

Preparing today can reduce the impact of future disasters

NEARLY **2000** U.S. EMERGENCY RESPONDERS HAVE BEEN TRAINED IN HOW TO GET CRITICAL **MEDICINES** THROUGH THE STRATEGIC NATIONAL STOCKPILE

### COMMUNITY



#### PREPARE TOGETHER

In times of crisis communities have to help one another

**ONLY 34%** OF PEOPLE REPORTED HAVING VOLUNTEERED TO HELP DURING A **DISASTER**

### INDIVIDUAL



#### PREPARE YOURSELF

Plan for what to do in an emergency

**OVER 60%** OF PEOPLE DO NOT HAVE AN **EMERGENCY PLAN** PLAN THAT THEY HAVE DISCUSSED WITH THEIR **HOUSEHOLD**



# COMMUNICATING IN EMERGENCIES

## THE CHALLENGE:

In an emergency, the right message at the right time from the right source can save lives.

## OUR STRATEGY:

CDC serves as a trusted source of timely and accurate information when lives are at stake. We are a hub of information, combining scientific expertise with the principles of crisis and emergency risk communication in every emergency response. We make sure information gets where it's needed, whether we're working with first responders, clinicians, or the public. Mechanisms like the Health Alert Network and Epi-X deliver critical scientific information to a large audience quickly. Our experts also conduct communication trainings across the country and the globe.

## MOVING THE DIAL:

Communication is especially critical when disaster strikes suddenly and people need to take action right away, as in a flood or hurricane, or when we may not yet have all the answers, as happened with Zika virus. In 2016, we continued to provide the latest science-based information to empower every individual to take action. We also faced new communication challenges during the Zika response as we worked to reach a variety of audiences in a shifting scientific landscape.

### The Health Alert Network

The Health Alert Network (HAN) is CDC's primary messaging mechanism for rapidly communicating urgent public health information with public health partners, including public information officers; federal, state, territorial, and local public health practitioners; clinicians; and public health laboratories—arming them with current, crucial information that combines scientific expertise with the principles of crisis and emergency risk communication.

Operating 24/7, the HAN messaging system directly and indirectly transmits health alerts, advisories, updates, and info services to more than one million people—ultimately saving lives and protecting people from health threats.

# 7 Things to Consider When Communicating About Health



Christine E. Prue, MSPH, Ph.D.  
Centers for Disease Control and Prevention



# LOOKING FORWARD







Staff in the CDC Emergency Operations Center monitor and respond to emergencies 24/7.



# LOOKING FORWARD

.....

Our nation is facing urgent public health emergencies, from Zika virus to the growing opioid epidemic. As we meet these new challenges, we cannot let our guard down.

We must get ready for the emergencies we know we're likely to face, like natural disasters or identified terrorist threats, as well as those that may be unexpected. When disaster strikes, we have to be able to hit the ground running. Emerging infectious diseases will continue to challenge us to be even more adaptive as we learn new information.

It is critical we sustain CDC's ongoing work to reduce the impact of emergencies. As the world's premier public health agency, CDC will continue to offer expertise, guidance, and assistance when and where it's needed. We will continue to answer the call – in our emergency operations center, in our labs, and out in the field. We will continue to seek ways to meaningfully measure how well prepared the country is at all levels, and use those measures to learn and improve. We will use our knowledge to create consistent approaches that ensure excellence, always.

Moving forward, we will work to continue improving state and local response readiness, expand medical countermeasure partnerships, and strengthen emergency management programs in the United States and around the world. We remain committed to responding quickly and efficiently to emerging public health threats, and there will no doubt be other, unforeseen challenges that require action. We must be ready to respond.





## READINESS TO RESPOND

### THE GOAL:

To increase effectiveness of online systems and improve response readiness at every level.

### WHY IT MATTERS:

CDC, through the Public Health Emergency Preparedness Cooperative Agreement, provides critical support to state and local health departments to prepare for and respond to large-scale emergencies.

### OUR STRATEGY:

Last year, CDC created the Online Technical Resource and Assistance Center (On-TRAC) for state and local public health partners to access new and existing preparedness systems, tools, and resources related to medical countermeasure distribution and dispensing. In 2017, CDC will add new functionality to the On-TRAC platform, improving the process that allows our public health partners to request technical assistance and to communicate and collaborate with other state and local health departments. These changes address some of the barriers to response readiness identified in last year's MCM Operational Readiness Review, including insufficient staffing for points of dispensing operations and security.

Additionally, CDC will redesign the National Select Agent Registry (NSAR) to streamline information sharing and to ensure that work with the most dangerous pathogens is conducted as safely and securely as possible. The redesign of this system will include an online portal that gives registered facilities an easier way to communicate with the Federal Select Agent Program and share important documents, such as inspection reports.



# DELIVERING RESULTS THROUGH PARTNERSHIP

## THE GOAL:

To expand partnerships and enhance the supply chain that allows us to deliver critical medicines and supplies where they're needed most.

## WHY IT MATTERS:

CDC's Strategic National Stockpile (SNS) is one of our country's greatest assets. We rely on its experts and their ability to quickly send medical countermeasures during a public health emergency.

## OUR STRATEGY:

In 2017, we plan to expand our existing relationships with private industry and other federal partners to better coordinate every step of the medical supply chain, from manufacture to delivery, to minimize vulnerabilities and enhance efficiency. These partnerships will increase the reliability of the commercial supply chain in emergency responses. Additionally, CDC will continue to provide support to states and local jurisdictions for full-scale exercises, as well as training for emergency responders across the country on how to request, receive, and distribute medical countermeasures from the stockpile.





## A WORLD OF PROTECTION

.....

### THE GOAL:

We must strengthen emergency management programs around the world to stop disease outbreaks where they begin.

.....

### WHY IT MATTERS:

As people and economies across the globe become more connected, the threat of disease spreading from a remote location to America increases. Despite CDC's unwavering dedication to preparedness, about two-thirds of the world remains unprepared for public health emergencies.

.....

### OUR STRATEGY:

As part of a comprehensive plan to improve global health security, CDC provides public health emergency management training for its future incident managers to lead emergency responses – small or large, domestic or international. By building and sustaining partnerships with healthcare providers, hospitals, and businesses around the globe, CDC helps countries build emergency management programs, advises on building emergency operations centers, and trains public health professionals to quickly identify and respond to public health threats.

In addition, CDC invests in research and evaluation efforts to enhance public health emergency management with research topics focused on incident management training for emergency responders, the communication needs of high-risk populations, and risk communication effectiveness. This research will help us improve public health emergency management at CDC.



